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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Implementation of Sections 3(n) and 332 or the Communications Act	)	GN Docket No. 93-252
	)	
	)	
Regulatory Treatment of Mobile Services	)	

COMMENTS OF GEOTEK COMMUNICATIONS, INC.

Geotek Communications, Inc.

Michael Hirsch
Vice President
External Affairs
1200 19th Street, N.W., #607
Washington, D.C. 20036

Dated: June 20, 1994

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SUMMARY

In order to "harmonize" the licensing, technical and operational rules of formerly private Part 90 services for purposes of regulatory parity, the subject Further Notice of Proposed Rule Making in GN Docket No. 93-252 ("Further Notice") incorrectly assumes that SMR service providers can be neatly divided into two categories: (1) wide-area multichannel Specialized Mobile Radio ("SMR") service providers that seek to compete with cellular and (2) small, local SMR providers that seek to deliver traditional dispatch services to business customers.

In the Further Notice, the Commission relies upon this oversimplified analysis to propose rules for the first category (wide-area, multichannel) similar to cellular Part 22 rules and to propose rules for the second category (traditional dispatch) similar to Part 90. This inflexible analysis ignores the fact that SMR providers do not fall into two simple categories and cannot be easily characterized.

For example, Geotek Communications is a wide-area multichannel SMR that seeks to provide innovative dispatch service to business customers. Geotek intends to use a single high power transmitter rather than

cellular-like low power interconnected cells to provide its service, relying on an innovative Frequency Hopping Multiple Access ("FHMA") technology to achieve high capacity. Thus, Geotek does not fit either category of the Commission's analysis.

Geotek does not compete with the cellular product market and will not market its innovative dispatch service as a substitute for a cellular common carrier service. Thus, Geotek's SMR service is not "substantially similar" to cellular for purposes of regulatory parity. Therefore, Geotek submits that it should not be subject to cellular-like technical and operational rules.

As an example of how this misconception of the industry can lead to inappropriate results, the FCC proposes to adopt height and power restrictions for wide-area SMRs essentially identical to the existing height and power rules for cellular. If these technical rules were applied to dispatch providers like Geotek, then it would effectively eliminate their ability to deploy innovative, spectrally efficient dispatch technology, such as FHMA, because such technology is designed for an SMR architecture (e.g., a few high power cells rather than numerous low power cells).

The FCC should recognize in its rules that its abstract "two category" analysis of the SMR market is unrealistic. Instead, the Commission should establish a regulatory environment that would provide licensees with the technical flexibility to devise and deploy new technologies to meet rapidly changing customer demands. In the case of height and power requirements, for example, the FCC should adopt its proposal to limit station power at the licensees service area border, but provide licensees with flexibility within the interior portions of its service area.

Geotek supports the adoption of 10-channel license blocks for 900 MHz SMRs in MTA-based service areas. Geotek submits that MTA-based service areas are the most suitable geographic service area designation for dispatch services. Consistent with the Commission's proposals in the 900 MHz Phase II proceeding, PR Docket No. 89-553, incumbent SMR licensees who have been constrained to Designated Filing Areas in Phase I should be allowed to expand to the new borders of their service area.

Incumbents should not have to file additional applications to reflect their build-out to the MTA borders. There would be no mutual exclusivity and no

competitive bidding associated with such build-out by incumbent SMR licensees. Incumbent SMR providers would still have to meet a Commission population-based coverage requirement within the MTA during their license term, and any "unserved areas" would be partitioned and subject to competitive bidding as in the cellular context.

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STATEMENT OF INTEREST

Through its subsidiaries, Geotek Communications Inc. ("Geotek") holds authorizations in the 900 MHz frequency band of the Specialized Mobile Radio ("SMR") service. In GN Docket No. 93-252, the Commission has, inter alia, adopted rules to implement the basic provisions of Sections 3(n) and 332 of the Communications Act (the Act), as amended by Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 ("Budget Act"). Second Report and Order, GN Docket No. 93-252, 9 FCC Rcd 1411 (1994), erratum, Mimeo No. 92486 (released March 30, 1994)("Report and Order"). As primarily a 900 MHz SMR provider that utilizes innovative and spectrally efficient technology on a "wide-area" basis to deliver innovative dispatch services to busi-

ness customers, Geotek has a direct interest in the regulatory treatment of the SMR service.[1]

COMMENTS

I. THE COMMISSION'S ANALYSIS OF THE SMR SERVICE IS OVERSIMPLIFIED

The Further Notice states that its scope is limited to "harmonizing" the technical, licensing and operational rules of CMRS services that are "substantially similar" common carrier services. To this end, the Commission proposes that the analysis of whether services are substantially similar should focus on the services provided to end users and the customer base of such services.

For purposes of its analysis of the SMR service, the Commission suggests that the service is comprised to two types of service providers: 1) wide-area multichannel SMR providers that seek to compete with cellular, and 2) small, local SMR providers that seek to deliver traditional dispatch services to business customers.[2] Geotek submits that this analysis is oversim-

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[1] Because Geotek's primary business is in the 900 MHz SMR service, it has limited the scope of its comments accordingly.

[2] See Further Notice at ¶ 15-16.

plified because it fails to encompass existing companies like Geotek that utilize a wide-area, high power, multi-channel SMR architecture to deliver dispatch services to business customers.

The Commission's SMR service analysis suggests that if an entity is a wide-area, multichannel service provider, then the entity necessarily provides a cellular-like service. Geotek notes, however, that this wide-area criterion largely ignores the actual service being provided to end users -- the basis through which the Commission has stated it would determine when a service is "substantially similar" for purposes of regulatory parity. Geotek submits that there are wide-area, multichannel service providers in the Public Safety, Industrial (including Business), and Land Transportation Radio Services as well as SMR service providers that do not provide a cellular-like service.[3]

For example, on June 25, 1993, PowerSpectrum, Inc., a wholly-owned subsidiary of Geotek, was granted a waiver to construct and operate a high power spectrum-efficient SMR network using Frequency Hopping Multiple Access ("FHMA") technology. In granting the waiver, the

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[3] See 47 C.F.R. §§ 90.629 and 90.631.

Private Radio Bureau found that PowerSpectrum's proposal "was unique in that it is highly spectrum efficient."[4] The Bureau found that Geotek's equipment was "one of the most efficient SMR proposals to date."[5] Geotek's FHMA technology relies on the SMR model of high power large coverage transmitter stations to obtain spectrum capacity gains rather than the cellular-like model of low power multiple sites.

Thus, under the Commission's analysis of the SMR service in the Further Notice, Geotek would be classified as a cellular-like provider. This classification is not consistent with the nature of Geotek's service, its end users or its target customer base. Geotek provides essentially "one to many" dispatch services (i.e., dispatcher to fleet transmissions) in typically short transmissions. Cellular, by contrast, is comprised of "one-to-one" telephony services (i.e., station to station transmissions) in typically longer transmissions.

Moreover, the Commission's analysis also failed to note that there are distinct differences between the 800 MHz and 900 MHz SMR markets. The equip-

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[4] In the Matter of PowerSpectrum, Inc., DA 93-770, Order (June 25, 1993)("PowerSpectrum Waiver").

[5] Id.

ment intended for 800 MHz is largely incompatible with radio equipment intended for 900 MHz.[6] For example, Nextel has held itself out as both a cellular provider and an 800 MHz SMR provider, and Motorola has devised its MIRS SMR technology as 800 MHz equipment to provide both types of service. Other entities, such as Geotek and Ram Mobile Data, consider themselves primarily 900 MHz SMR providers, and utilize different technologies, employ distinct marketing strategies and seek different market segments than the 800 MHz market participants. Accordingly, the 800 MHz and 900 MHz SMR markets have been treated as distinct markets both by the Commission and the respective marketplace participants.[7]

Therefore, Geotek proposes that the Commission's analysis of CMRS service providers for pur-

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[6] See D. Fertig, Specialized Mobile Radio, Federal Communications Commission (February 1991) p. 14, n.15 (noting the following reasons for equipment incompatibility: the 900 MHz channel bandwidths are half the size of 800 MHz (12.5 kHz vs. 25 kHz), the separation between the transmit and receive channels of a given channel pair is 45 MHz for 800 MHz and 39 MHz for 900 MHz, and the distance between the frequencies at 800 MHz and 900 MHz require separate antennas and other equipment for both the base stations and the end user's mobile radios).

[7] See, e.g., PR Docket 89-553 (wherein the Commission proposed a variety of measures to improve the 900 MHz SMR market) and PR Docket No. 93-144 (wherein the Commission proposed a variety of measures to improve the 800 MHz SMR market).

poses of its "substantially similar" test include the following criteria: 1) the nature of the service actually provided and 2) the nature of the customer base.[8] Geotek submits that the inclusion of the two additional criteria in its analysis of CMRS providers would more accurately reflect the market characteristics of and the customer base intended to be served by the various service providers such as Geotek that seek to provide traditional (non-cellular-like) dispatch service to the business community. While Geotek recognizes that the FCC must "harmonize" substantially similar services, it requests that the Commission recognize the distinguishing characteristics of the markets within the CMRS rubric, including the respective service offerings, customer bases and network architectures.

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[8] Geotek notes that the additional criteria mirror the criteria cited by the Commission in its description of substantially similar test, Further Notice at paras. 13-14, although the Commission did not rely on them in its analysis of the SMR service in paras. 15-16 of the Further Notice.

II. THE COMMISSION SHOULD ADOPT GENERAL RULES BY AUGUST 1994 AND DEFER THE PROPOSED TECHNICAL RULES TO FUTURE SERVICE SPECIFIC REPORT AND ORDERS

Pursuant to the Omnibus Budget Reconciliation Act of 1993, the Commission must adopt rules to ensure that competitors in the mobile service marketplace are subject to comparable regulatory requirements by August 10, 1994.[9] In order to meet this deadline, the Commission will have little time to evaluate the record of this proceeding before adopting final rules. Many of the technical issues involved in this proceeding are complicated and far reaching and will have a substantial impact on the market for all CMRS services. Therefore, Geotek respectfully requests that the Commission adopt general rules on service areas and licensing procedures and defer to future Reports and Orders in this proceeding the technical rules concerning co-channel interference, emission masks, antenna height and transmitter power requirements.

Geotek notes that the Commission's ability to focus on and devise both general rules and service specific rules in the Competitive Bidding proceeding was improved by its decision to not address all of the spec-

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[9] Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, Title VI, § 6002(b), 107 Stat. 312, 392 (1993).

trum-based services in a single Report and Order by the March 8, 1994 statutory deadline.[10] Geotek recommends that the Commission likewise defer consideration of the above-referenced service specific technical rules.

III. SPECIFIC PROPOSALS

Generally, Geotek recommends that the CMRS regulatory scheme should, regardless of the specific service area designations or technical requirements ultimately adopted, focus on the service area border while permitting flexibility within the interior portions of a licensee's service area. Adopting this policy for CMRS would constitute an extension of the Commission's approach to the regulation of PCS and cellular services.[11]

A market-based licensing approach (rather than a transmitter-by-transmitter licensing approach) would allow licensees to use their service areas as a laboratories for technical innovation and spectral efficiency by providing them with the autonomy to devise new ways

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[10] Since March 8, the Commission has released two large Report and Orders in the Competitive Bidding proceeding and still must issue several more before addressing all the services subject to auctions.

[11] See e.g., 47 C.F.R. §§ 22.902, 24.232, 24.236 and 24.237.

to best serve their customer's needs and by protecting adjacent channel licensees from harmful interference. Geotek's comments below reflect this market approach to licensing and interference protection. In addition, they draw the necessary distinctions between the various services consistent with the Commission's proposed criteria for determining when CMRS providers are serving "substantially similar" customer bases.

A. License Areas, Mutual Exclusivity, and Competitive Bidding

Currently, the FCC licenses the 900 MHz service on a Designated Filing Area ("DFA")[12] basis. In the 900 MHz Phase II proceeding, PR Docket No. 89-553, the Commission proposed to adopt local, regional and nationwide licenses for wide-area multichannel 900 MHz SMR licensees. In that docket, Geotek filed comments supporting MTA-based service areas. See Comments of Power Spectrum, Inc. at 7-8 (October 9, 1992). Geotek recom-

[12] DFAs largely follow the Metropolitan Statistical Areas ("MSA") as defined by the Census Bureau. Although there are 50 urban centers, eight have been combined due to their close proximity. The combined markets are: San Francisco (Market No. 5)/Sacramento (Market No. 30), Boston (Market No. 7)/Providence (Market No. 34), Washington, D.C. (Market No. 9)/Baltimore (Market No. 16), and Cincinnati (Market No. 23)/Dayton (Market No. 42). See Public Notice, Private Land Mobile Application Procedures for Spectrum in the 896-901 MHz and 935-940 MHz Bands, 1 FCC Rcd. 543 (1986).

mends, consistent with the rules adopted in the PCS proceeding, that the Commission adopt Major Trading Area ("MTA")[13] license service areas comprised of ten channel blocks within each MTA for the 200 channel 900 MHz SMR service.

Geotek submits that MTA service areas would provide the type of regional coverage most conducive to the dispatch business. Specifically, BTAs fail to provide adequate coverage for commercial fleet customers based in an urban center, and nationwide licenses would require build-out costs disproportionate to typical dispatch customer service needs. Accordingly, Geotek opposes the adoption of nationwide licenses and further recommends the adoption of MTAs over BTAs.

In addition, Geotek suggests that the Commission license the 900 MHz band in ten channel blocks per MTA consistent with the existing licensing scheme in the 900 MHz SMR band. Licensees should be allowed to acquire as many channels as necessary for technical or business purposes. These additional channels could be acquired either through competitive bidding for channels

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[13] A MTA is a geographic designation devised by Rand McNally that is a large regional area that envelopes one or two metropolitan areas.

held by the FCC or through acquisition from other incumbents in the 900 MHz SMR band.

Assuming the Commission adopts a new service area in the 900 MHz context to replace the current DFA service area, it must also address how existing 900 MHz SMR licensees would be permitted to build-out their existing systems to the market boundaries of such new service areas. Consistent with the market approach adopted in the cellular rules, Geotek recommends that the Commission allow 900 MHz SMR carriers to build-out their systems to the market boundaries of the MTA or regional license over the term of their license.[14] At the end of the "fill-in" period all areas not covered within a service contour would be deemed "unserved" and open to competing applications subject to competitive bidding.

Geotek supports the Commission's proposals in the Part 22 Rewrite proceeding as it would apply to the 900 MHz SMR service, which allows carriers to add internal base stations without filing modification applications if they do not effect the outer service area boundaries at the border. Consistent with the

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[14] See, e.g., 47 C.F.R. § 22.902.

Commission's proposed market approach to 900 MHz SMR, the same public interest considerations would apply in this context. See Further Notice of Proposed Rule Making, CC Docket 92-115, released May 20 1994, 7 FCC Rcd 3658 (1992) ("Part 22 Rewrite"). Therefore, because existing licensees that build-out or expand their systems from their current DFAs to the borders of newly established service areas would not file applications, there would be no mutual exclusivity or competitive bidding.

Alternatively, if the Commission does not adopt this Part 22 Rewrite proposal and instead requires the filing of "modification" applications, such applications should not be deemed "major". Not treating such applications as "major" modifications would be consistent with the Commission Rules applicable to the cellular service, 47 C.F.R. § 22.902, and the legislative history of the competitive bidding provisions of the Budget Act. As the Commission recognized in the Competitive Bidding proceeding (PP Docket No. 93-253), Congress did not intend modifications to be subject to competitive bidding.[15]

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[15] See Further Notice at ¶ 132, and n. 231 (citing H.R. Rep. No. 103-111 at 253).

Even if such applications were deemed by the Commission to be "initial"[16] applications, Congress provided the Commission with the discretion to not subject certain applications to competitive bidding.[17] For example, pursuant to this authority the Commission declined to subject initial applications for "intermediate microwave links" in the Competitive Bidding proceeding that otherwise would meet the legislative criteria for competitive bidding.[18]

Moreover, as a matter of policy, the Commission should not subject initial or modification applications of existing licensees to competitive bidding where the only reason they have filed the applications is because the Commission has changed its rules. The Commission recognized this policy when it stated in the competitive bidding proceeding that the applications submitted by incumbent microwave licensees at 2 GHz forc-

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[16] "Initial" applications are submitted by an applicant that seeks to become a licensee, as opposed to seeking renewal or modification of an existing license.

[17] See 47 U.S.C. § 309(j)(3) (providing the Commission with the authority to decline to subject certain applications or classes of licensees to competitive bidding where the Commission finds such action necessary to safeguard the public interest).

[18] See Second Report and Order (PP Docket No. 93-253) at ¶ 41-43 (citing 47 U.S.C. § 309(j)(3)(A-C)).

ibly relocated by ET Docket 92-9 should not be subject to competitive bidding in order to "safeguard the public interest" pursuant to section 309(j)(3).[19] By changing the SMR service area designations, any applications filed by existing SMR licensees as a result would be analogous to the applications submitted by 2 GHz incumbent licensees rather than the applications submitted by initial license applicants. Geotek submits that it would be unfair to require any such applications to be subject to competitive bidding because the 900 MHz service would not have the build-out opportunity provided other CMRS services, including cellular and PCS, and therefore the 900 MHz service would essentially be penalized by the change in its service area contours.

B. Antenna Height and Transmitter Power Limits

In the Further Notice, the Commission seeks comment on three proposals concerning antenna height and transmitter power limits: 1) to conform the cellular and SMR rules on base station height and power, 2) to require SMR licensees that acquire enough channels to

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[19] See Notice of Proposed Rule Making (PP Docket No. 93-253) at n. 118, and Second Report and Order (PP Docket No. 93-253) at n. 34 (the Commission also noted that this issue was essentially mooted by its decision not to auction intermediate microwave links).

operate cellular-type systems should be required to comply with power limits, and to retain existing height and power limitations for "traditional SMR service [that] is not substantially similar to cellular service," and 3) to allow both wide-area SMR systems and cellular systems to have greater flexibility over station power within the interior portions of their service areas and to limit such power at the licensee's service area border.[20] Geotek submits that the first two proposals overlook the market segment served by wide-area dispatch service providers like Geotek and should be rejected.

The Commission's proposals assume that all wide-area SMRs will employ the cellular model -- frequency reuse -- to achieve high capacity. After years of research and capital expenditures, however, Geotek has developed for commercial application an innovative and spectrally efficient technology that utilizes the SMR architecture comprised of a few high power cells rather than a cellular architecture comprised of numerous low power cells. Adoption of the cellular model as a standard by the Commission would necessarily exclude

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[20] Further Notice at ¶ 50.

such innovation from the marketplace. Specifically, if the Commission were to compel all wide-area SMR service providers to adopt a cellular height and power limits, then Geotek would be forced to utilize a cellular-like architecture, with which its spectrally efficient technology is incompatible. Therefore, Geotek submits that the Commission should not adopt any rule that effectively requires low power multiple site "cellular" configurations.

Geotek recommends that the Commission adopt its third proposal to allow both wide-area SMR systems and cellular systems to have greater flexibility over station power within the interior portions of their service areas and to limit such power at the licensee's service area border. This proposal would be compatible with their existing or proposed systems and technology or, at the very least, maintains existing height and power levels, particularly within the interior portions of their service areas.[21] This proposal would also not tie new providers of service to a specific architecture or technology while at the same time it would protect other licensees at the borders of the service areas.

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[21] We note that the Commission could modify the cellular rules to be in parity with the SMR rules.

C. Handset Emission Standards

Geotek recommends that handset power emissions should not be changed or, if changed, should remain compatible with ET Docket No. 93-62 examining equipment standards to ensure the safety of radio frequency emissions ("RF Emissions").[22] Geotek has relied on the existing SMR rules in developing its FHMA technology. The Commission should not arbitrarily change these standards unless it has a compelling reason to do so.

Geotek concurs that radiation safety concerns are one such compelling reason. Geotek therefore supports either maintaining the existing SMR standards or the standards as modified by the RF Emissions Docket, whichever resulting emissions standard is more strict. Geotek notes that the dispatch 900 MHz SMR market constitutes a "controlled" environment of business subscribers who are more aware of the hazards of RF emissions than the uncontrolled criteria applied to the general public.

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[22] In the Matter of Guidelines for Evaluating the Environmental Effects of Radio Frequency Radiation, ET Docket No. 93-62 (proposing to adopt ANSI-IEEE C-95-1 1992 ("SAFETY LEVELS WITH RESPECT TO HUMAN EXPOSURE TO RADIO FREQUENCY ELECTROMAGNETIC FIELDS").

D. Interoperability Standards

In the Further Notice, the Commission asks whether it should: (1) establish interoperability standards intended to achieve interoperability among all classes of CMRS equipment; (2) establish such standards to achieve the narrower objective of promoting interoperability among different types of equipment used to provide the same type or class of CMRS service; or (3) maintain the status quo by retaining interoperability requirements for cellular equipment but refraining from any extension of these requirements to other classes of CMRS services.[23] Geotek supports proposal three.

The Commission should only ensure that users of one CMRS system are able to communicate with users of other CMRS systems. Because all CMRS providers will, by definition, provide interconnection to the public switched network, Geotek recommends that interoperability be accomplished at the switching level within the public switched networks. Such an approach would provide the flexible environment for the introduction of new and innovative subscriber equipment.

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[23] Further Notice at ¶ 57.

If the Commission required interoperability at the handset level, then it would be in effect mandating air interface standards for all CMRS. This would obviously reduce competition within the equipment market and not meet the goal of encouraging competition, flexibility and innovation at the handset level.[24]

E. Coverage Requirements and License Term

Geotek supports the Commission proposals to extend the construction period with coverage benchmarks and license term of SMRs to ten years. The recent grant of various waivers of the construction deadline and loading requirements and the adoption of a rule[25] to permit extended construction schedules are evidence that the existing construction deadline in Part 90 unnecessarily curtails wide-area service providers and the deployment of innovative technologies. Specifically, Geotek recommends adopting the coverage requirement for 900 MHz SMRs that the Commission adopted in the broadband PCS rules: to cover one third of a licensee's ser-

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[24] Geotek strongly concurs with the Commission's statement in the Further Notice that "mandating uniform interoperability standards for various classes of CMRS equipment is potentially costly and could result in standards that do not reflect the rapid pace of development in mobile radio technology." Id.

[25] 47 C.F.R. § 90.629.